ERGONOMIC HAZARD ELIMINATION IN WAREHOUSE LOGISTICS BY APPLYING THE HEIRARCHY OF CONTROL MEASURES

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ABSTRACT

Safety is a crucial aspect of human existence. In every industry, occupational health and safety has become an essential component. The goal of this project is to use the HIRA method to control ergonomic risks in warehouse logistics. The identification of ergonomic risks in warehouse logistics is the primary objective of this paper. In order to conduct a Hazards Identification Risk Assessment (HIRA) for manual handling activities, it is necessary to reduce risk everywhere in order to evaluate the safety measures. The risk can be derived from the hazards, and the severity rating for the hazards can then be examined. determining whether or not the risks are acceptable by calculating their severity and likelihood of occurrence. We can provide a variety of hierarchy of control measures to lower the risk's severity and probability level by utilizing HIRA methods. We can reduce ergonomic issues in warehouse logistics by implementing engineering controls and administration controls. The science of designing the workplace with the worker's capabilities and limitations in mind is known as workplace ergonomics. Risk factors for musculoskeletal injuries can be eliminated through an ergonomics improvement process at the workplace, allowing for improved human performance and productivity.

Keyword : - *HIRA , EROGONOMICS HAZARD, WAREHOUSE LOGISTICS.*

1. INTRODUCTION

Ergonomic solutions have been successfully implemented by industry to lower the risk of MSD injuries among workers. Designing controls are the best, while managerial or work practice controls might be suitable. Individual security measures are just imperceptibly compelling. There are three fundamental classifications of answers for adjust the work environment to the laborer and lower ergonomic gamble factors.

1.1 KUEHNE + NAGEL–ANOVERVIEW

Kuehne + Nagel Worldwide AG (or Kühne + Nagel) is a worldwide vehicle and strategies organization situated in Schindellegi, Switzerland. It gives ocean cargo and airfreight sending, contract strategies, and overland organizations. With nearly 15% of the world's air and sea freight business, Kuehne + Nagel was the world's leading freight forwarder in 2010. In Chennai, Kuehne + Nagel Pvt Ltd, located in Redhills, is a leading contender in the logistic services sector. People who work for this company are dedicated to their roles and put in a lot of effort to achieve the company's larger objectives and common vision. Schneider Electrics has a distribution center for electrical components at Kuehne + Nagel Pvt Ltd in Redhill.

1.2 PROCESSFLOW

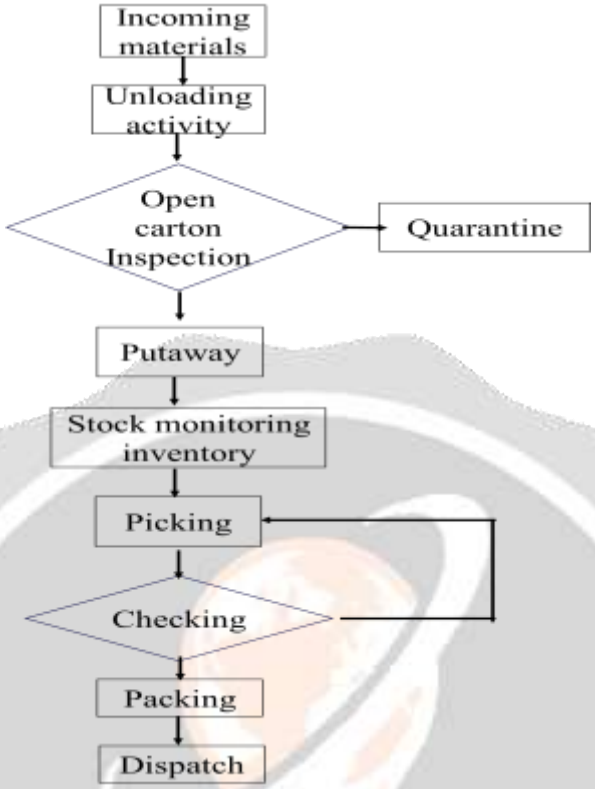

Fig 1 *PROCESS FLOW DIAGRAM*

Items arrive in a warehouse and are registered by an employee by scanning a bar code. Warehouse activities are performed to bring the items into the storage area.

Outbound logistics is the process of storing and moving goods to the customer or end user. It involves order fulfillment, packing, shipping, delivery and customer service related to delivery. Items are picked from their assigned inventory location and inventory counts are updated to ensure stock levels are accurate. Products are then packaged, labeled and sorted by carrier and service, and carriers pick up the packages and the finished products are shipped out.

2. PROBLEM IDENTIFICATION

Various injuries, including long-term ones, can result from exposure to ergonomic hazards. The way a space is designed often causes ergonomic hazards, so it's important to plan ahead and allow for how workers interact with their workspace. Using positions that put stress on the body, repeating, awkward posture, forceful stir, stationary position, direct pressure, vibration, extreme temperature, noise, and work stress are among these dangers. Other hazards include working in awkward postures or remaining in the same position for extended periods of time. By enforcing engineering and administration controls, HIRA methods can be used to reduce ergonomic hazards.

3. METHODOLOGY

3.1 HIRA

A HIRA is a risk assessment tool used to assess which hazards pose the greatest risk. It is not intended to be used as a prediction tool to determine which hazard will cause the next emergency.

3.1.1 STPES OF HIRA

- Identification of hazards
- Identify People who might be affected
- Identify the Risk
- Evaluate the Risk rating by probability & Severity level
- Implementation of control measure to reduce the risk
- Review Periodically

The most crucial component of the risk assessment process is the systematic identification of hazards. It is used to identify critical tasks and operations that pose significant risks to employees' health and safety, as well as equipment-specific risks brought on by energy sources, working conditions, or activities.

Determine who might be harmed and how, and then take action. This includes people who are just starting out in the workforce, young workers, people with disabilities, lone workers, cleaners, visitors, contractors, maintenance workers, members of the public, and people who might not always be present at the workplace. Assuming that you share your working environment, ponder what your work means for others present. Ask the staff if they know of anyone you might have overlooked.

Risk is the assurance of probability and seriousness of tenable mishap/occasion arrangements to decide size and focus on recognized perils. It can be accomplished using a qualitative, quantitative, or semi-quantitative approach. In contrast to semi-quantitative analysis, which employs numerical values for both severity and likelihood, qualitative analysis uses words to describe the magnitude of potential severity and the likelihood that those severity will occur. Modeling the outcomes of an event or set of events, extrapolating from experimental studies or previous data, or both can be used to determine severity. The type of risk and the purpose for which the risk assessment output will be utilized will determine how severity and likelihood are expressed and combined to provide a level of risk. We are required by law to take every precaution to safeguard individuals.

Utilizing a hierarchy of controls, exposures to occupational hazards must be controlled in order to safeguard workers. Elimination, substitution, engineering controls, administration controls, and personal protective equipment make up the control hierarchy.

When workplace processes or design are altered, new machinery, substances, or procedures are introduced, or an incident resulting from hazard exposure occurs, it is essential to review your risk assessment. To address potential risks, a risk register should be reviewed frequently, at least annually.

4. RISK ASSESSMENT

Material Unloading - Body Pain, Fatigue - Using BOPT to unloading the material from the truck.Job rotation & frequent breaks provide to the operators to reduce the ergonomic issues.

Open carton Inspection activity - Back pain - Implement the Scissor Lift trolley to reduce the back pain of the operator. Job rotation & frequent breaks provide to the operators to reduce the ergonomic issue.

Put away - Leg pain, Fatigue - Using BOPT to unloading the material from the truck. Job rotation & frequent breaks provide to the operators to reduce the ergonomic issues

Packing - Leg pain - Anti- fatigue mat provide to the packer to reduce the legpain of the operator caused by continuously standing. Job rotation & frequent breaks provide to the operators to reduce the ergonomic issues.

Loading to Dispatch - Body Pain, Fatigue - Using BOPT to unloading the material from the truck. Job rotation & frequent breaks provide to the operators to reduce the ergonomic issues.

5. IMPLEMENTATION TO ELIMINATE THE ERGONOMIC HAZARDS

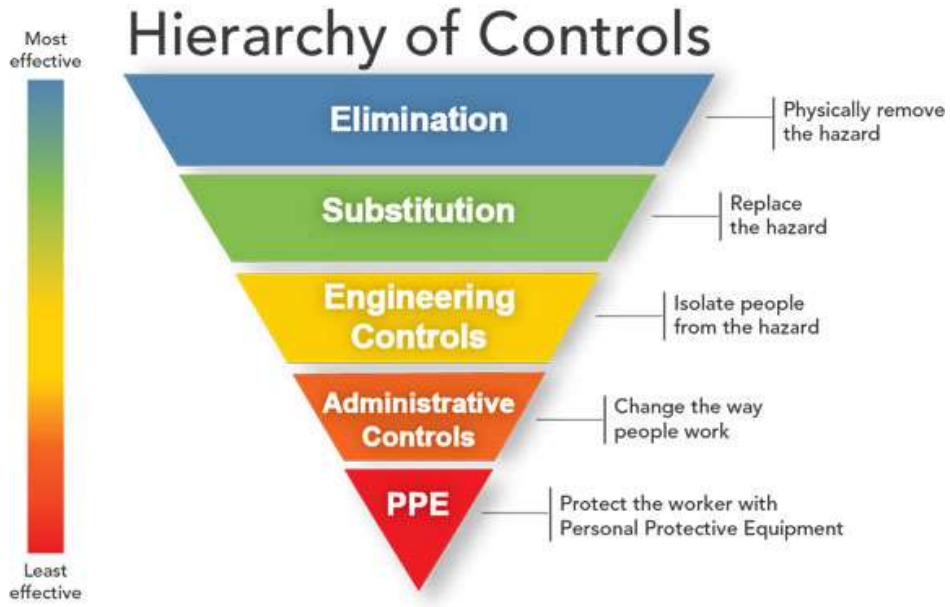

FIG 2 HIERARCHY OF CONTROLS

IMPLEMENTATION ELIMINATES THE ERGONOMIC HAZARDS IN INBOUND & OUTBOUND SECTION

FIG 3 IMPLEMENTATION OF BOPT FOR HPT

BENEFITS OF BOPT

- Using Powered Industrial truck,we can easily picking,put away during the logistics activity.
- To avoid manual handling.
- Increase the efficiency
- Less manpower required

REPLACING HPT WITH MOVING TROLLEY

FIG 4 REPLACE HPT FOR CART TROLLEY.

BENEFITS BY USING CART TROLLEY

- Easy to access in the mezzanine area.
- Easy to picking for small quantity of materials.
- Avoid ergonomic hazards
- Reduce fatigue

IMPLEMENTATION OF SCISSOR LIFT IN PACKING SECTION

FIG 5 SCISSOR LIFT HPT

BENEFITS:

- Reduce the time consumption
- Easy to dispatch
- Reduce the ergonomic hazards
- Reduce fatigue

IMPLEMENTATION OF ANTI-FATIGUE MATS FOR CHECKING SECTION.

FIG 6 ANTI-FATIGUE MATS

Benefits:

- Reduce leg pain
- Increase efficiency
- Reduce time consumption
- Reduce nervous disorder

6. CONCLUSIONS

Ergonomics helps people feel more at ease at work, reducing stress and injuries caused by bad posture and doing the same thing over and over again. There are three main categories of solutions: improving work policies and procedures, eliminating the danger, and providing personal protective equipment Ergonomics aims to prevent musculoskeletal disorders (MSDs) and soft tissue injuries. The workstation becomes more productive when it is designed to accommodate good posture, less exertion, fewer motions, and improved heights and reaches. A worker's risk of injury goes up when they are exposed to these known risk factors.

7.REFERENCES

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